

Response to Comments on Draft NPDES Permits for:

Pacific Aquaculture, Inc. - Site #1 (WA0026336)

Pacific Aquaculture, Inc. - Site #2 (WA0026328)

Pacific Aquaculture, Inc. - Site #3 (WA0026719)

Faith Frontier Ministries - Chief Joseph Fish Farm (WA0026379)

Introduction

On February 8, 2012, the Environmental Protection Agency (EPA) issued a notice of proposed issuance of four National Pollutant Discharge Elimination System (NPDES) permits for net pen facilities discharging to Rufus Woods Lake (Columbia River) (waters of the Colville Confederated Tribes (CCT) and of the United States). The permits include: Pacific Aquaculture, Inc. - Site #1 (WA0026336), Pacific Aquaculture, Inc. - Site #2 (WA0026328), Pacific Aquaculture, Inc. - Site #3 (WA0026719), and Faith Frontier Ministries - Chief Joseph Fish Farm (WA0026379). The public comment period ended on March 9, 2012. EPA received comments from the following:

Jeff Korth, Washington Department of Fish and Wildlife
Michael Finley, Confederated Tribes of the Colville Reservation
Ted Otness, Chief Joseph Fish Farm, Inc.

The following summarizes the comments received and responds to each of them.

Jeff Korth, Washington Department of Fish and Wildlife (WDFW)

C1. Pertaining to EPA's conclusions and Summary of Effects on Threatened Species (Table 5) on page 30 of the Fact Sheet, the potential impacts on the presence of ESA listed (threatened) steelhead just downstream of Rufus Woods has not been addressed. Fish that escape from these aquaculture facilities potentially travel downstream, especially during high flows in the Columbia River. In 2011, a large number of unmarked fish escaped one or more of these facilities, which heightened WDFW's awareness that potential problems might ensue. Unmarked fish, if allowed to move downstream into anadromous fish zones below Chief Joseph Dam, greatly complicate fish management in downstream areas and potentially contribute to impacts to ESA-listed steelhead. While these fish are triploid and cannot reproduce, competition for food resources or predation by the released fish may occur. For these reasons, WDFW recommends, the "Fish Escape and Prevention Plan" for all aquaculture sites should include the requirement of a visible external mark on all fish located at any of the four sites. The external mark of choice would be the removal of the adipose fin prior to the fish being placed into the pens, but other external marks could be used if needed to identify net pen fish from other stocks.

R1. EPA does not have authority under the Clean Water Act (CWA) to require fish to be marked in anyway. Regardless, the escaped or intentionally-released net pen trout are readily identifiable the field because they exhibit definite fin erosion when compared to wild salmonids.

No changes to the permits were made based on this comment.

C2. Research studies should be required to monitor the ecological impacts of any escaped fish on ESA-listed salmonids downstream of Chief Joseph Dam. Fish with an external mark can be tracked with reasonable effort, identified for research purposes, and if necessary may be removed from the anadromous zones by use of fisheries and/or other means.

R2. See R1, above, for EPA's response concerning marking net pen fish. Studies to date can be used to conclude the ecological impacts, of escaped fish on salmonids downstream of the Chief Joseph Dam, are unlikely.

The Colville Confederated Tribes commissioned a study in 2011 by Battelle Laboratory on the downstream migration of farm-raised fish purposely released by the Tribe (Brown et al. 2011). The results showed that only a small percentage of the fish released passed through Chief Joseph Dam (only 27 of the 293 released (9.2%)). 2011 was an extraordinarily high discharge year and most passage through the dam occurred during a time of high spill. In general, smaller fish, less than 15.5 inches (40 cm) were more successful in passing the dam, compared to larger fish, but passage rates were inconsistent.

Research shows that escaped farmed fish do not pose a significant threat of predation or food competition with native steelhead or other salmonid smolts. Existing research on the diets of rainbow trout in Rufus Woods Lake over the past 2 years (2010 and 2011) showed that the large triploid fish are not adapting well to being released, and have a very low rate of forage fish predation (Richards et al. 2011). Extensive stomach content analyses indicate that about 25% of the released fish had empty stomachs and when there was content, the vast majority of individual organisms were very small pelagic crustaceans (e.g. Daphnia, copepods, ostracods, etc.) followed by diptera (midges and flies), snails, and terrestrial arthropods (insects and spiders). Stomach fullness was not quantitatively assessed but in most cases was very low, and the size of prey was inappropriately small for the large size of the pen-origin trout. At least a few of these fish were seen lying on their sides in shallows on the bottom in the Chief Joseph Dam pool and respiring, but obviously dying. It is believe that aquaculture-reared salmonids when kept so long in captivity lose their innate skills to feed on size-appropriate wild fish prey that are relatively abundant in some littoral zones of Rufus Woods Lake. As a result, such fish are unlikely to pose a moderate or significant risk of predation or competition with native steelhead or other salmonid smolts.

Similar viewpoints are based on experience with other large farmed salmonids accidentally released into the wild as summarized in a NOAA published volume by Waknitz et al. (2002) from which the following is excerpted:

“In a study on farmed fish in British Columbia by Black et al. (1992), stomach analyses revealed that less than 1% of farmed salmon in net-pens (in this case coho and chinook

salmon) contained the remains of fish. Since 1992 Canadian government scientists have examined the stomach contents of escaped Atlantic salmon recovered in the open waters of British Columbia as part of the Atlantic Salmon Watch Program in the province. Fish remains of any sort were rarely observed, and to date, the remains of just a few Pacific salmon (chum salmon) have been observed, in this case, in the stomach of a hatchery Atlantic salmon juvenile in Carnation Creek, British Columbia (Thomson and McKinnell 1993, 1994, 1995, 1996, 1997, Thomson and Candy 1998; A. Thomson). That only a few juvenile salmonids have been observed in the stomachs of escaped Atlantic salmon (over 1,000 stomachs examined in British Columbia and Alaska) indicates that these fish have a very low propensity to prey on juvenile salmonids, compared to Pacific salmon. For example, Fresh (1997) compiled information showing that about 50% of chum salmon juveniles are consumed by various predators, including other salmon, during their short period of migration from freshwater to marine environments. In the Chignik Lakes of Alaska, Ruggerone and Rodgers (1992) observed that juvenile coho salmon ate almost 60% of the sockeye salmon fry population. Fresh (1997) indicated that 33 fish species, 13 bird species, and 16 marine mammal species are predators of juvenile and adult Pacific salmon. Tynan (1981) examined the stomachs of 93 coho salmon post-smolts captured after release from a net-pen near Squaxin Island, in South Puget Sound [Washington], and reported that only 3 stomachs contained fish remains, which were identified as smelt (*Hypomesus pretiosus*).

At the NMFS Manchester Research Station in Puget Sound, many species of forage fish have been observed seeking refuge from predators in net-pens containing adult Atlantic salmon. Among the species observed are known prey of salmonids, such as herring (*Clupea pallasii*), smelt, sand lance (*Ammodytes hexapterus*), shiner perch (*Cymatogaster aggregata*), and tube snouts (*Aulorhynchus flavidus*). These prey species voluntarily enter the net-pens through the mesh and then grow too large to exit. Alverson and Ruggerone (1997) noted that many thousands of these small fish had been observed in Atlantic salmon net-pens, and eventually had to be removed by hand.

Buckley (1999) observed that cannibalism and predation by chinook salmon on other salmonids was uncommon in Puget Sound waters. It is difficult to imagine that escaped Atlantic salmon, conditioned to a diet of artificial feed pellets and trained to be fed by humans, could have greater predation impacts on juvenile native salmonids than the impacts observed with free-swimming Puget Sound chinook and coho salmon.”

No changes to the permits were made based on this comment.

Michael Finley, Confederated Tribes of the Colville Reservation:

C3. The increase in anglers (boat and land based) as well as the remote access points the land based fishermen use is causing an adverse effect to natural and cultural resources. Impacts are direct, indirect and cumulative. The fish pens are responsible for increased boating. Waves from boats are accelerating bank erosion. The most obvious problem is people clambering down the banks to access fishing stations. This type of access provides additional routes for cows, erodes slopes, strips vegetation, probably impinges on tribal or fee property rights, crosses

archaeological sites, provides for opportunistic artifact collection and the increased visitation results in accumulations of trash and human waste.

R3. The Colville Confederated Tribes operate a lake-stocking program and intentionally release purchased steelhead trout into Rufus Woods Lake for harvest by Tribal and other licensed fishers. In addition, the operators of the Rufus Woods net pen facilities acknowledge that a certain number of steelhead do unintentionally escape from the net pens into Rufus Woods Lake. While these intentional and unintentional releases may be facilitating an increase in the use of the upland and near shore areas, EPA has no authority through the NPDES permitting program to limit or control pedestrian or boat access to upland or near shore fishing stations within the Colville Reservation boundaries of Rufus Woods Lake. Nor does the EPA have authority under the CWA to regulate the impacts of that access on the natural and cultural resources. NPDES permits only authorize the discharge of pollutants into waters of the U.S. from regulated point sources.

No changes were made to the permits based on this comment.

C4. The Colville Fish and Wildlife Department is concerned about the lack of marking of the net pen fish. While all the fish that the Confederated Tribes of the Colville Reservation purchase from the net pens for release are marked and/or tagged, the triploids in the net pens are not marked in anyway. Escape of these fish occurs, sometimes in large numbers and recent Tribal studies indicate that 50% of the fish leave the reservoir each month (Shallenberger and Rensel, 2011). When these unmarked fish enter the Columbia River below the Chief Joseph Dam, anglers can't tell them apart from the Endangered Species Act (ESA) listed Upper Columbia steelhead. Due to the protection afforded to the endangered wild steelhead, anglers are not able to catch the escaped triploids. If they were marked with an adipose fin clip, anglers could legally catch these fish rather than have them wasted. Additionally, there is potential for miscounting of wild versus hatchery origin steelhead. We request a stipulation be added requiring all fish in the net pens be marked with an adipose fin clip.

R4. See R1 above.

No changes were made to the permits based on this comment.

C5. The Independent Scientific Review Panel during the recent review of Bonneville Power Administration funded projects voiced concern over the toxic blue-green algal mats near the net pens and downstream at the collectors above Chief Joseph Dam. Studies conducted in 2012 indicated nutrient levels in the lake had become eutrophic. Whether the cause of this change from the oligotrophic status is due to the addition of nutrients from the unconsumed fish food or the extremely high flows that may have flushed increased nutrients through the system from upriver sources is unknown. The major concern here is water quality and its effect on fish mortality. High fish mortality in 2011 from elevated Total Dissolved Gas levels complicates the understanding of the impact and further study is needed. Monitoring of water quality near the net pens on a continual basis (outside of the aquaculture facility) needs to be done. Due to the

large quantities of feed, number of fish, and fish mortality involved, additional independent monitoring of nutrient levels and cycling downstream of the net pens should be conducted.

R5. The impact from dead fish and decaying food waste and feces should be minimal because of required best management practices (BMPs) such as feed management and carcass removal. In addition, because of the strong, regular currents in Rufus Woods Lake, any waste and feces should be dispersed quickly and no build up should occur, further reducing the impact from these pollutants. The EPA considers the monitoring in the draft permit adequate to assess the impacts of fish feeding and fish mortality on nutrient levels. The permit contains analytical monitoring intended to ensure compliance with permit provisions and applicable water quality standards including the narrative criteria for nutrients. The analytical monitoring is included for dissolved oxygen and turbidity at various water column depths both upstream and downstream of the discharge.

Semi-monthly diving, underwater photographic surveys and continuous remote monitoring of the lake bottom during the most critical river conditions are also required by the permit. This monitoring is intended to document excess unconsumed fish food. If excess unconsumed fish food is observed, the permittee is required to report the incident under Part II.D.4 (Elements of the BMP Plan) of the permit and amend their BMP plan to address feed management according to Part II.D.8 (Elements of the BMP Plan) of the permit.

No changes were made to the permits based on this comment.

C6. Environmental Trust issued a Tribal pollution discharge permit for Pacific Aquaculture net pen sites #1 and #2 in 2009. The net pen facility proposed by Pacific Aquaculture and the Chief Joseph net pens will require Tribal discharge permits in addition to NPDES approval by EPA. Environmental Trust will coordinate the Tribal permitting with the net pen operators, other Tribal departments, federal and state agencies (including EPA), and public involved with river management and water quality. It is anticipated that the initial permit will be reviewed and may be amended as a part of this process.

R6. Comment noted.

Ted Otness, Chief Joseph Fish Farm, Inc.

C7. Our area of concern is from page 9 regarding “Photographic Surveys,” specifically diving and underwater photo etc. Our concern is there are times, sometimes for months, during snow melt and heavy run-off, that it is unsafe to send a diver into the river (extreme current and virtually no visibility).

R7. According to Appendix A of the permit:

The permittee must conduct a dive at the net pen facility twice a month, approximately two weeks apart between June and October, inclusive, each year.

During these months commercial divers should be able to safely complete the requirements set in the permit. If a commercial diver is not able to safely dive during a month, a detailed notice of non-compliance should be sent to EPA in accordance to Part IV.H (Other Noncompliance Reporting).

No changes were made to the permits based on this comment.

C8. The other concern is about continuous, June 1 through December 31 each year, remote monitoring of the lake bottom. Continuous means 24/7 we assume. Does this mean we hire three people, three eight-hour shifts, to watch the monitor 24 hours a day on the bottom? Are we required to have lights for nighttime viewing?

R8. According to Appendix A of the permit:

The permittee will record observations of bottom conditions as viewed by the cameras at least daily between June and December, inclusive, using a qualitative index of conditions, e.g., ranking on a scale of 0 to 3 for feed and feces occurrence and other conditions. Since fish fecal matter often appears similar to feed, this remote survey system must be evaluated and calibrated with diving observations and photography.

Observations should be made at least one time per day, not continuously.

All permits were revised to reference “Appendix A” in I.D.2 (Lake Floor Survey).

Literature Cited

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- Richards, D.C., J.E. Jack Rensel, Z. Siegrist, F.J. O’Brien, D.A. Kiefer 2011. Rufus Woods Lake – Columbia River Reservoir Morphometrics, Initial Food Web and Rainbow Trout Fishery Studies. Prepared for the Colville Confederated Tribes Fish and Wildlife Department, Nespelem, WA by EcoAnalysts, Inc. Wenatchee, WA and System Science Applications Inc. Irvine, CA. 130 p.
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